in no instance to allow of the retraction of the head and limbs,—and the feet are modified into perfect fin-like oars; the toes being flat and far asunder, and the whole of them enveloped in a continuous and undivided skin. These animals are all marine, and generally vegetable feeders. One species, constituting the genus *Sphargis*, is covered with a leathery skin, instead of the horny plates which form the usual protection of the osseous shell.

Such is a brief, but necessary sketch of those characters of the principal groups or families of the Testudinata, which appear to determine their habits and modes of life. It will be obvious that so meagre a sketch can only be intended to render intelligible, the account of their natural history which follows.

Whilst we see, in the other classes of the Vertebrata, the functions and enjoyments of life provided for by the attributes of strength, of fleetness, or of acute powers of sensation; or, where these are wanting, by such a peculiar development of the mental faculties, as shall equally avail their possessor in the fulfillment of those destinies which appertain to him in the situation which he holds in the scale of being; we turn, with a feeling of disappointment, to the sluggish, torpid habits, and rude, ungainly structure which characterize most of the Testudinata. But although these animals have not the power of escaping from danger by swiftness of foot, they are provided, instead of such a means of safety, with a hard solid case, impervious to the teeth even of beasts of prey; a shelter more secure than the burrow of the marmot or the mole. Although they cannot, like the migratory birds, wander from place to place, on the approach of winter, in search of a more genial climate, yet their peculiar conformation renders such a change unnecessary, by producing a greater or less degree of torpor and insensibility as the cold advances, until every faculty and function of life becomes extinct, and sensation itself is rendered less and less capable of suffering, exactly in proportion as the cause of pain and distress, in the higher grades of animal life, increases. It is not only in those animals whose habits are most obviously interesting, that we are to look for illustrations of the wisdom and power of the Creator, and of the universal adaptation of the structure of animals to their habits: in this respect the tortoise and the

toad are as perfect examples of creative wisdom, as the orang or the beaver, the bee or the ant. But even amongst the Testudinata, the vital powers are developed in very different degrees in the different forms. The Land Tortoises, even in the tropical climates in which they most abound, and the temperature of which is calculated to raise their sluggish powers to the greatest degree of activity compatible with their organization, are still the awkward, slow-moving beings to which so many opprobrious proverbs have been applied; and the utmost extent of improvement of which they are susceptible, is an almost ludicrous attempt at vivacity, which seems only to show how little external circumstances can modify those habits which structure has limited and controlled. But amongst some of the Fresh-water forms, the carnivorous habits by which they are characterized require a rapidity and extent of movement widely different from the contracted motions of the former group. Thus *Chelydra serpentina*, the Snapping Turtle as it is commonly called, a native of the lakes and rivers of South America, not only pursues its prey, which consists of fish and of young water fowl, with great velocity and vigour, but seizes it with a rapid and powerful movement of the neck, and a sudden snap of the jaws, sufficiently forcible, as I have myself seen, to cut asunder a small stick. The movements, indeed, of many of the fresh-water species, when pursuing their food, or escaping from danger, are characterized by considerable speed and power.

The food of Tortoises varies according to their structure, and the situation to which that structure adapts them. The land tortoises generally feed on vegetable substances, preferring the succulent or milky plants of the natural order Compositæ; such at least is the case with those which I have observed in a state of comparative captivity. Thus the common tortoise of Europe, *Testudo græca*, usually selects the lettuce, the dandelion, the milk-thistle, and other plants of this description: a specimen of *T. pardalis*, however, fed almost exclusively on grass, which it plucked by a sidelong movement of the head. On approaching a plant, the head is usually stretched out slowly towards it, and its fitness for food evidently determined by the smell. The mouth is then slowly opened, the head turned on one side, so as to take as large a portion of the leaf as possible into the mouth, which is then closed, and the morsel cut off between the horny edges of the upper and lower jaws, as if with shears.

THOMAS BELL *A Monograph of the Testudinata* LONDON, 1832-1836 THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA Octavo